

Amendments to the Drawings:

The attached sheet of drawings includes changes to Fig. 3. This sheet, which includes Fig. 3, replaces the original sheet including Fig. 3. In Figure 3, the legend identifying each of the three photoluminescent curves is replaced by separate labelling of each curve. No new matter is added.

Attachment: Replacement Sheet

REMARKS/ARGUMENTS

Applicants express appreciation to Examiner Louie for discussing this application on Wednesday, September 20, 2006. During that telephonic discussion, Fig. 2 of the Henry White U.S. Patent 6,291,085 (and related discussion from column 8, lines 49-60) was compared with Applicants' Fig. 3 (and related discussion in paragraph [0085]). It was agreed that Fig. 2 of U.S. Patent 6,291,085 and its related discussion at column 8, lines 49-60 do not anticipate the rejected patent claims. Before agreeing to allow the claims, Examiner Louie desired more time to study U.S. Patent 6,291,085. Applicants agreed to submit this written response.

Claim Rejections – 35 USC § 102. Claims 1-8, 11-12, 14-16, 18-20, 22-28, 31-35, 37-39, and 42 were rejected under Section 102(b) as being anticipated by White et al. (U.S. Patent No. 6,291,085, hereinafter "White"). The Applicants' remarks and arguments in relation to this rejection submitted March 7, 2006 remain valid and are incorporated herein by reference.

In reply to Applicants' remarks and arguments, the Examiner, on page 6 of the final Office Action, stated:

Applicant argues that White et al. do not disclose the p-type ZnO layer has a luminescent peak at about 3.36 eV. However White et al. disclose the claimed limitations in col. 8, lines 49-60.

White's Fig. 2 discloses a luminescent peak at about 3.36 eV for undoped (n-type) ZnO. This is consistent with Applicants' Fig. 3 which also shows a luminescent peak at about 3.36 eV for undoped, bulk, n-type ZnO. However, White does not disclose a luminescent peak at 3.357 eV, as claimed, for p-type ZnO. Fig. 3 of the present specification discloses photoluminescent spectra for phosphorous and arsenic-doped p-type zinc oxide which both possess a noticeable luminescent peak at about 3.357 eV. This peak is labeled in Fig. 3 and discussed in paragraph [0085]. Both phosphorous and arsenic doped p-type zinc oxide share a second noticeable luminescent peak at about 3.367 eV. This peak is not labeled in Fig. 3. Claims 1, 23, and 42 recite that the p-type zinc oxide semiconductor material has a luminescent peak at about 3.357 eV.

Given that the arsenic-doped zinc oxide disclosed by White lacks a photoluminescent peak at 3.357 eV, White fails to anticipate claims 1-8, 11-12, 14-16, 18-20, 22-28, 31-35, 37-39, and 42. Applicants respectfully request withdrawal of the rejection under Section 102(b).

Claim Rejections – 35 USC § 103. The Office Action rejected claims 21 and 40 under Section 103(a) as being unpatentable over White et al. in view of Haga (U.S. Patent No. 6,838,308). Claims 13, 29-30, and 43-44 were rejected under Section 103(a) as being unpatentable over White et al. in view of Yoshii et al. (U.S. Patent No. 6,707,074). Claims 17 and 36 were rejected under Section 103(a) as being unpatentable over White et al. in view of Merrin (U.S. Patent No. 3,864,725). Claim 41 was rejected under Section 103(a) as being unpatentable over White et al. in view of Harder et al. (U.S. Patent No. 5,331,655). The Applicants' remarks and arguments in relation to these rejections submitted March 7, 2006 remain valid and are incorporated herein by reference. Applicants request withdrawal of the foregoing rejections for the reasons of record.

Applicants respectfully request allowance of the pending claims. If there are any remaining issues preventing allowance of the pending claims that may be clarified by telephone, the Examiner is requested to call the undersigned.

Respectfully submitted,

/Evan R. Witt/

Evan R. Witt
Reg. No. 32,512
Attorney for Applicants

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KIRTON & McCONKIE
1800 Eagle Gate Tower
60 East South Temple
Salt Lake City, Utah 84111
Telephone: 801/323-5970